Global Odyssey 2002

Advances in PT/EQA for Clinical Microbiology

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Microbiological proficiency testing: A personal perspective.

Keith Jewell

What makes microbiology different

1: Microbiology samples are fundamentally non-uniform.

2: Microbiological taxonomy is fundamentally imprecise.

3: Microbiological samples are changing.

4: Traditional microbiological analysis depends upon behavior, not constitution.

5: Microbiology has many “right” answers.

Accreditation and Quality Assurance
V6 N4-5 2001
154-159

GUEST COMMENTARY

Does Proficiency Testing Meet Its Objective?

Concerns expressed:

•PT too concerned with procedures to recognize causative agents or correct identification rather than meaningful information.

•PT specimens did not represent reality.

•Pt …not concerned enough with constructive approaches

Advances in Microbiology PT/EQA

- Clinical realism
- Clinical relevancy
- Variety of challenge styles
- New challenge targets

ISO Guide 43-1

- *As far as possible, provide clinically relevant challenges that mimic patient samples and check the entire examination process…*

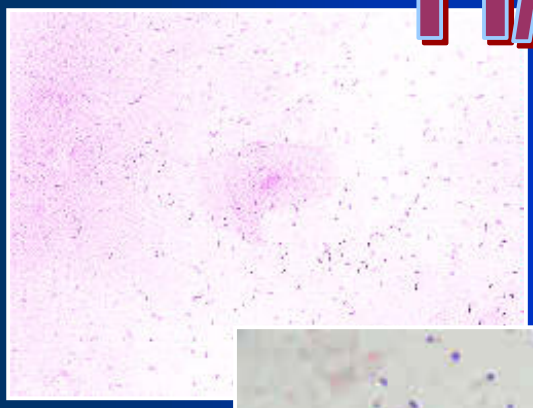
Similar text or concept found in:

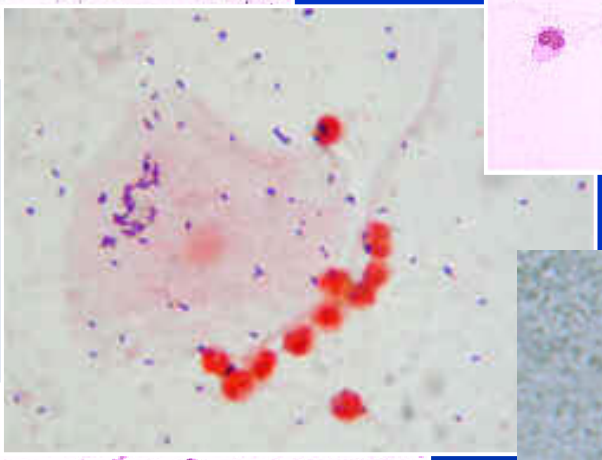
•Clinical Laboratory Improvement Act: 1988

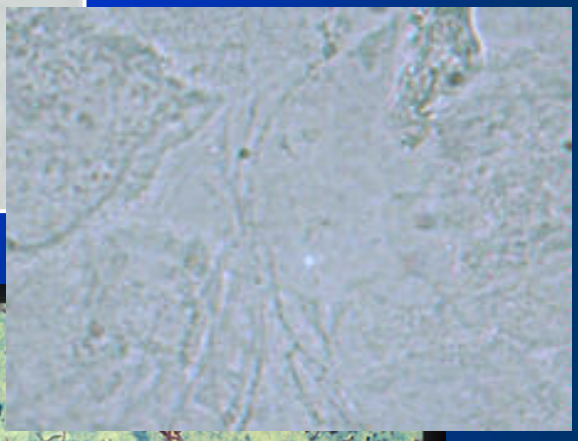
•WHO Requirements and Guidance for EQA

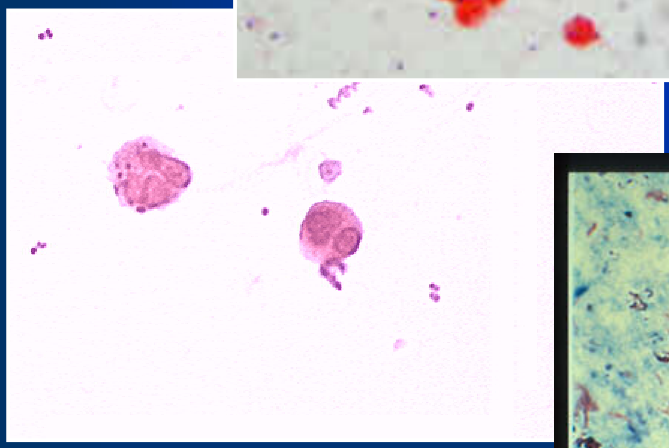
PT/EQA Specimens Can be Realistic

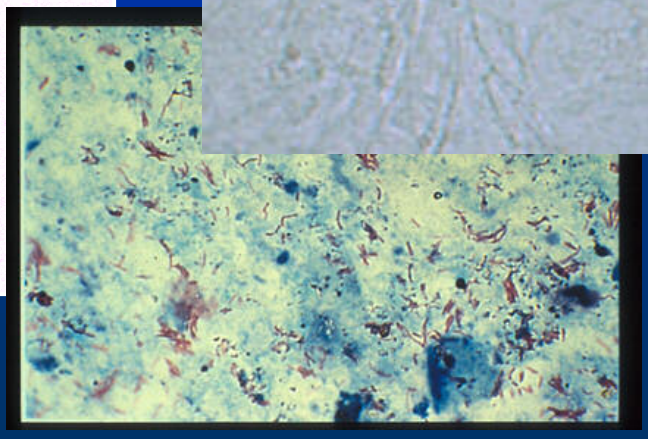
Clinically Realistic PT/EQA Microscopy



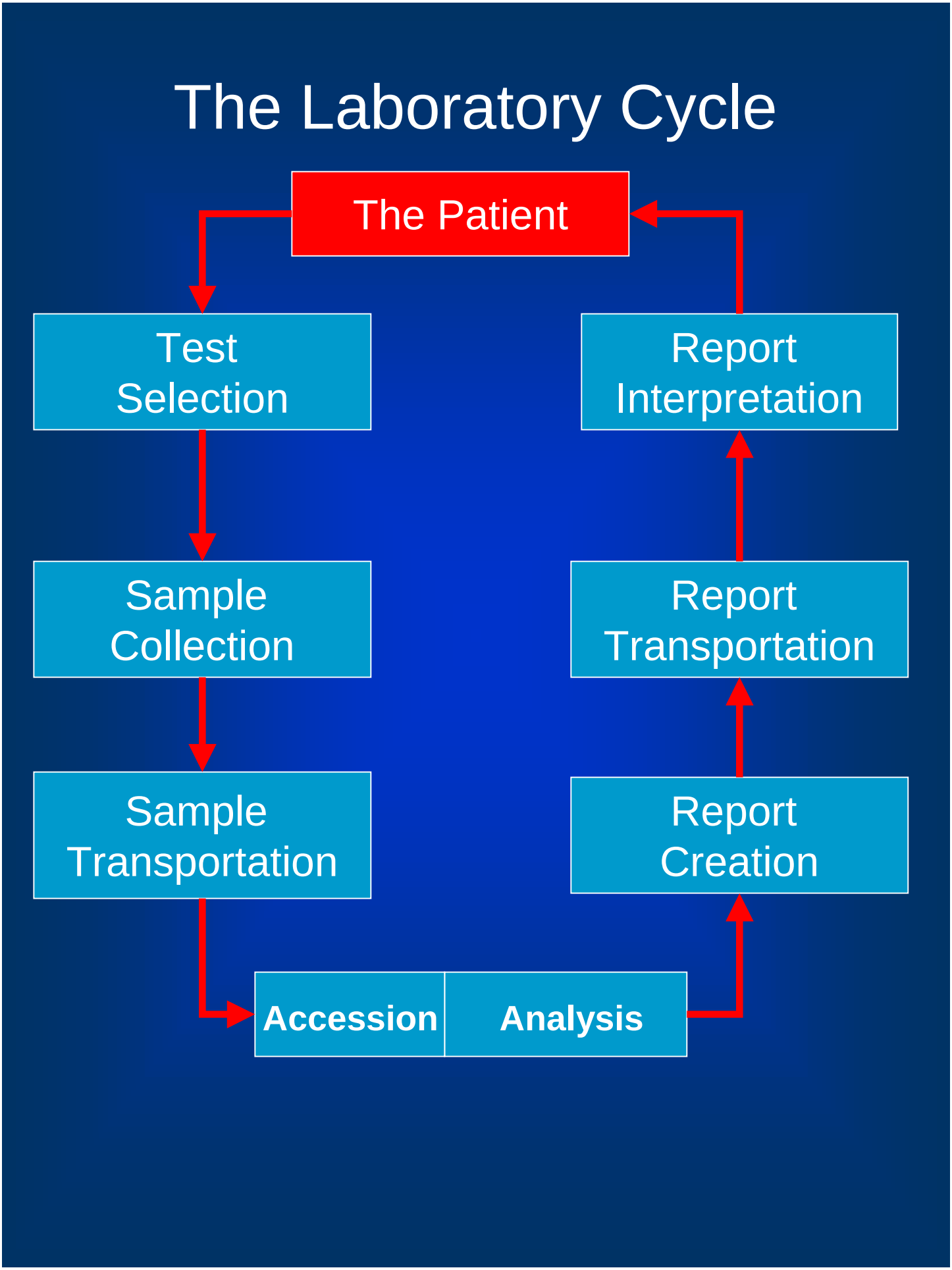




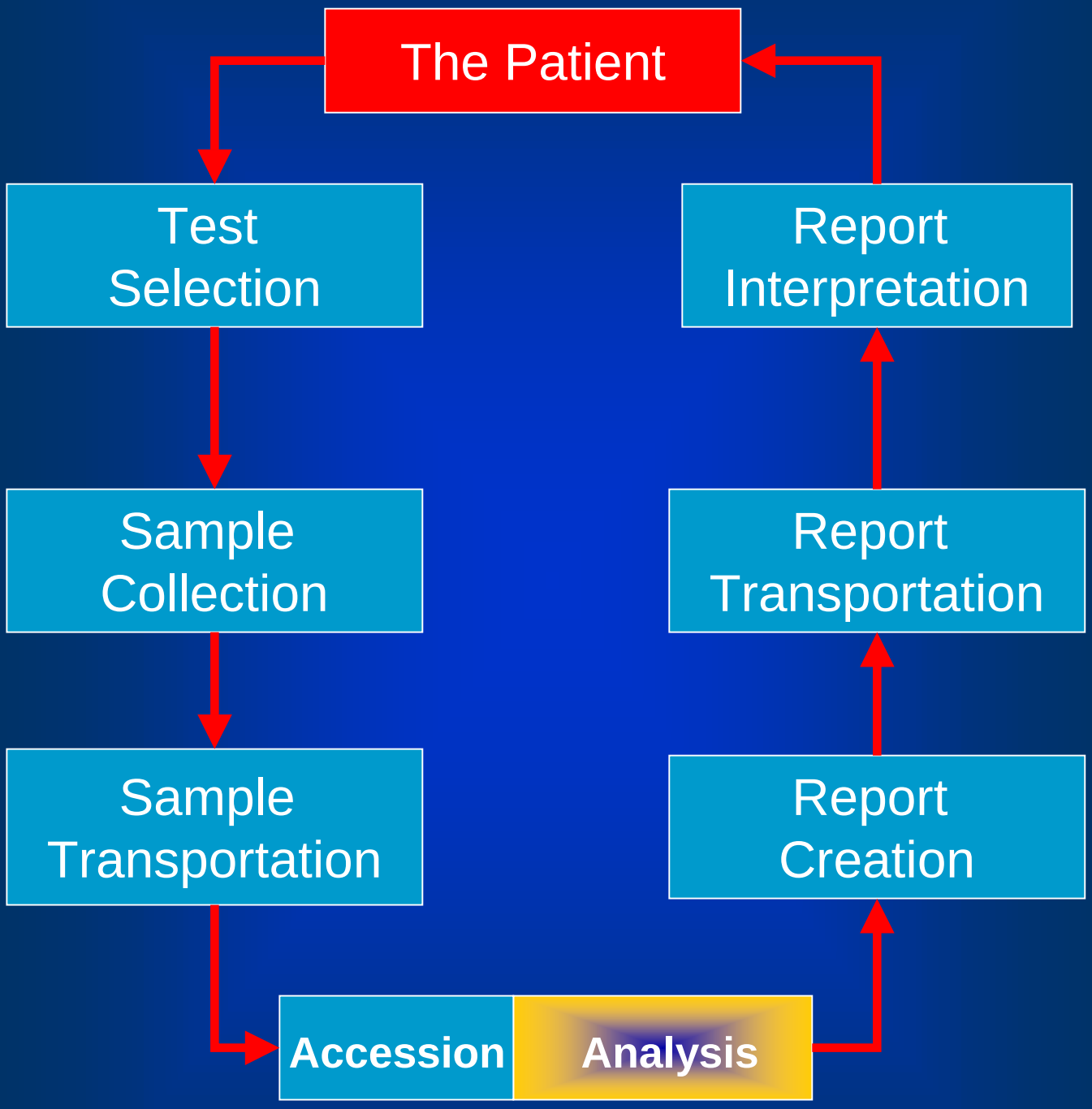




The Laboratory Cycle

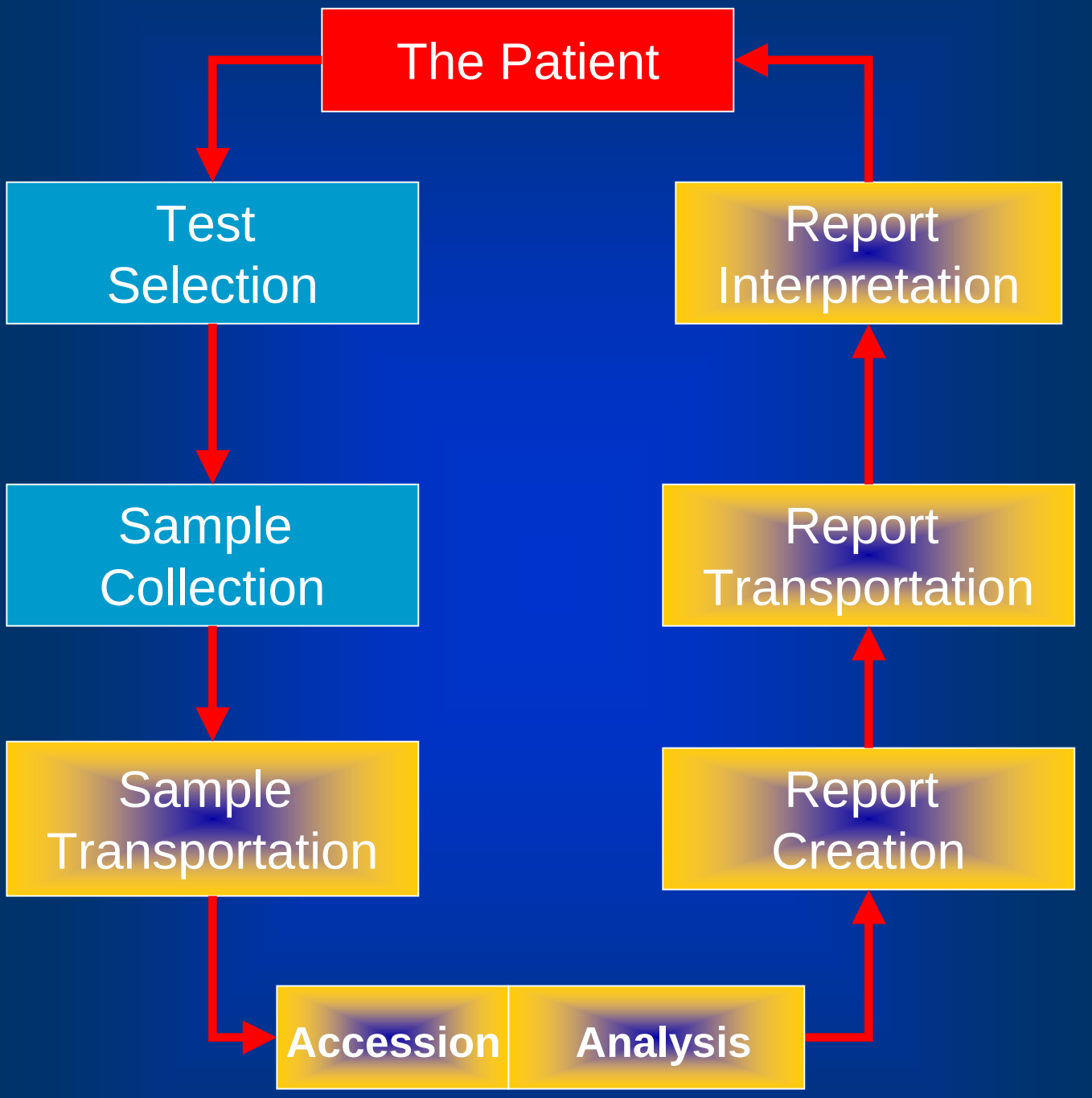


The Laboratory Cycle



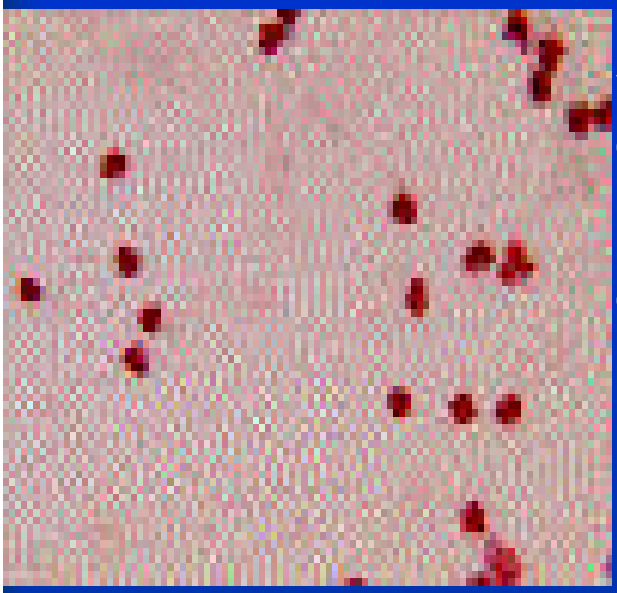
Traditional Microbiology PT

The Laboratory Cycle



Achievable Microbiology EQA

Clinical Relevancy Reporting



Smear from male urethra

Gram: neutrophils and *H. influenzae*

Culture: *H. influenzae*

- Challenge Results

No *N. gonorrhoeae*	55%
No *N. gonorrhoeae*; *H. influenzae*	28%
H. influenzae	15%
Other	2%

CMPT M013-3 November 2001

Clinical Relevancy in Susceptibility Challenges

Cephalosporin reporting and gram negative meningitis

- Do not report 1st generation agents
  - M21-3: 2000 - 73/131 (55.7%)
  - M011-2: 2001 - 85/141 (60.2%)
- Do report 3rd generation agents
  - M21-3: 2000 - 36/131 (27.5%)
  - M011-2: 2001 - 112/141 (79.4%)

Paper Challenge of Accessioning Practices

- A nasal swab is submitted to the laboratory with clinical information “possible anthrax”. No other information provided. What action would your laboratory undertake with this sample?

A	**Set-up and Culture.** **Read at 24 hours.**	22%
B	**Do not process.** **Destroy swab.** **Report: “Do not perform this test”.**	0%
C	**Do not process.** **Contact physician.**	34%
D	**Do not process. Seal for public health. Contact Public Health.**	78%

CMPT M013; November 2001

EQA of Packaging for Transportation of Infectious Agents

- Laboratories asked to submit a viable culture of *Escherichia coli* to the CMPT laboratory.

- Packaging assessed against prevailing Canadian regulations for domestic transport

- Education provided for those not in compliance with requirements.

EQA of Packaging for Transportation of Infectious Agents

RESULTS

Packaging over requirements:	19 (13.8%)
Packaging acceptable	113 (81.6%)
Packaging under requirements	6 (4.6%)

Note: results affirmed by conjoint blinded study

PT/EQA of HIV testing

CDC

- Human T-lymphotropic virus I and II antibodies
- T-lymphocyte immunophenotyping by flow cytometry
- HIV-1 ribonucleic acid determinations (viral load)
- HIV-1 p24 antigen testing

Acrometrix, US

- HIV-1 Resistance Proficiency Program

Advances in Microbiology PT/EQA 2002 and beyond

- More extensive challenges throughout the laboratory cycle.
- More thorough examination of issues that are critically important:
  - Integrity of sample
  - Appropriateness of investigation
  - Clinical quality of reports
  - Turn-around time
- PT/EQA for point of care testing

The future of Microbiology PT/EQA

Continuation of current trends

- Antiviral susceptibility
- Antifungal susceptibility

Application of nucleic acid technologies

- Bacterial identification
- Bacterial susceptibility testing

Point-of-care Testing

- Antigen detection
- Antibody detection
- Gene product detection

In Summary

- Traditional assessment has laid a solid foundation for external assessment.
- Advances in making EQA less artificial and introduced a sense of clinical realism and relevancy.